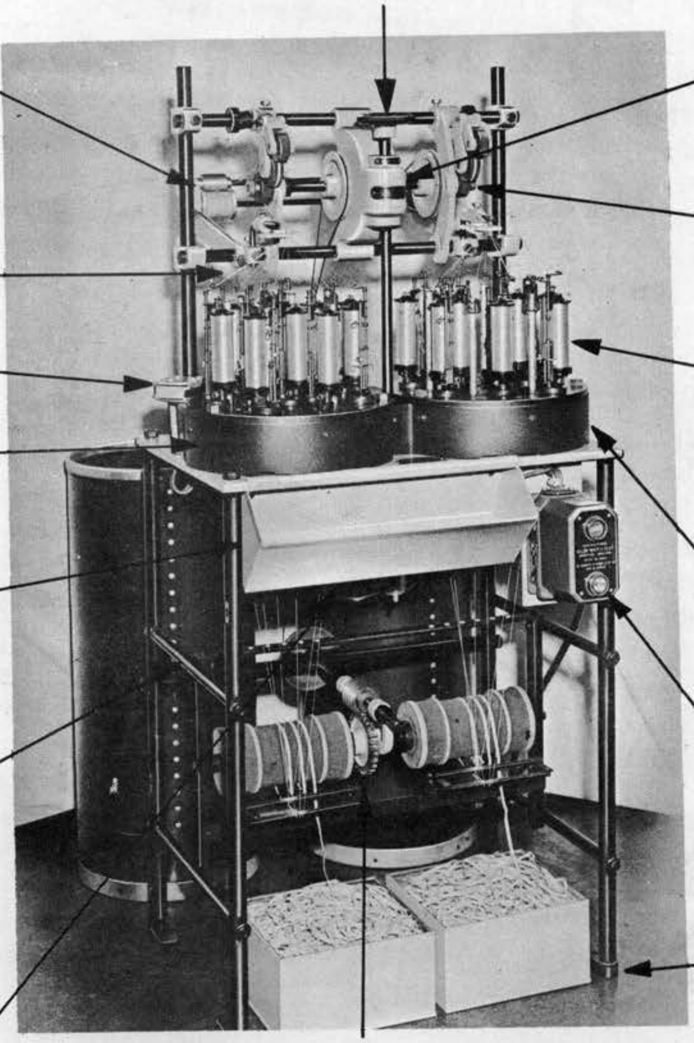
HOBOURN "HIGH-SPEED" BRAIDERS

NOTE

For the production of Rigid or Elastic Braids



Gear Driven Auxilary Rear Take Up Wheels for vertical braid delivery into large capacity cans.

Centre Handwheel for easy machine manipulation.

Bronze worm and worm wheel. Three Speeds Available.

Hardened steel knurled Haul off Wheels. Can be rapidly changed.

Perfect braid at 500 stitches per minute.

Electro-Mechanical cut out switch for yarn breakage.

Low centre of gravity High Speed Carrier, quickly interchangeable tension springs.

Oil Bath Carrier Head Casting.

Tray for Bobbins & Machine Load Data Sheets etc.

All gears enclosed & machine cut to aero engine accuracy standard.

Solid Bar Cross Braced Steel Frame.

Push Button start & stopping for increasing number of spindles per operative.

Four adjustable feet for Levelling Machine.

Built in third hp. Motor. No belt or clutch slip. No power wasted on shafting.

Positive even tension Rubber Feed Mechanism.

Cream Enamel Gun Metal Black and Chrome Operator Eye-appeal Finish.

The Hobourn Bobbin holds 72.05 cubic centimetres equivalent to 74 grammes of 300 Denier Rayon Yarn, this will make 5½ gross yards of 120% stretch 8 cord elastic per head.

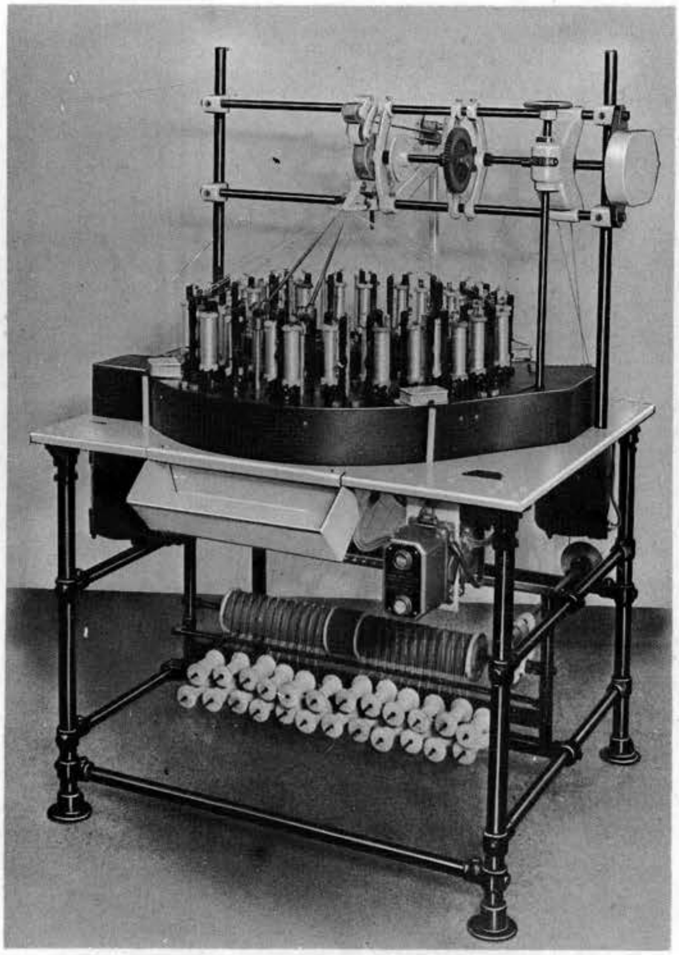
HOBOURN
ROCHESTER

HOBOURN AERO COMPONENTS LIMITED
ROCHESTER · ENGLAND
Telephone: STROOD 7626 · Telegraphic Address: POLAR—ROCHESTER

4264

HOBOURN
"HIGH-SPEED" BRAIDERS

For the production of Rigid or Elastic Braids



HOBOURN AERO COMPONENTS LIMITED
ROCHESTER, KENT, ENGLAND

Textile Machinery Manufacturers

Telegrams: **'Polar', Rochester**
Phone: **Strood 7626**

Hobourn High-Speed Braiders

WITH the introduction of the fourth issue of our Braider Catalogue, we have adopted this convenient binder. By this means our customers can file the various bulletins as issued in a handy form. Issues of maintenance instructions, spares lists and descriptions of our Ancillary machinery for the Braiding Industry can thus be kept readily available.

Many hundreds of our High Speed Braiders have gone into production in countries throughout the world since their introduction.

We have in the meantime continued with research and development in our efforts to further improve the performance and reliability of our machines. At this stage we would like to acknowledge the ready advice and assistance which we have received from the Braiding Industry.

The information received from all users under all sorts of climatic conditions with all kinds of differing products and types of yarn has materially assisted our design Staff.

We look forward to the continuance of our happy relationship with the Industry.

Without any major changes in design but with minor modifications reflecting normal healthy development we continue to offer machines that lead the world and, we are confident, are without peer.

We continue to provide service after sales, which enables our customers to get the best out of their machines, and it is a pleasure to us to give technical advice whenever it is sought. Our expert staff is always at the call of intending and established customers.

The range of machines has been considerably extended and continues to expand to meet the rising needs of the market. This range is illustrated in the ensuing pages.

HOBOURN AERO COMPONENTS LTD.,
ROCHESTER, ENGLAND.

As a result of much research and practical experience, HOBOURN Braiders are designed and produced to give maximum production together with reliability.

HOBOURN Braiders are manufactured by the most up-to-date production methods involving fine precision work as employed in the automobile and aircraft industries. Each machine is fully tested before despatch.

These machines embody many outstanding features which are more fully described in the following paragraphs.

TRACKLESS HEAD WITH OIL BATH

The Braiding head has been designed to operate at high speeds. There is no track, the bobbin carriers being actuated by horn gears and guided by wear resisting cross over inserts which are immersed in an oil bath.

Construction of the head can be seen in the illustration overleaf which shows a standard head with the top plate and 2 horn gears removed.

HAUL OFF MECHANISM

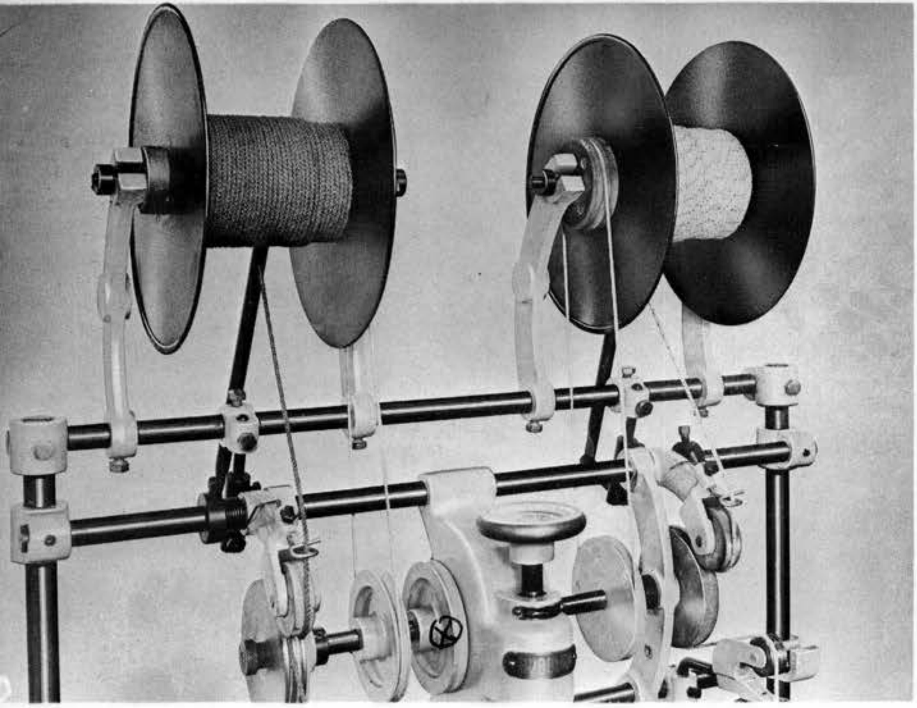
Gear driven haul off wheels are fitted to each head, the wheels being hardened and knurled to prevent wear and slip. They can be supplied in a range of sizes from 1″ diameter (25.4 mm.) to 4″ diameter (101.6 mm.). One haul off wheel is supplied with each head. The wheels are secured to the driving shaft by means of a knurled nut which can be quickly removed. Thus wheel changes are achieved in a matter of seconds.

The standard arrangement allows for vertical delivery of finished braid by means of additional belt driven wheels mounted at the rear of the machine. into any suitable type of container.

On round braiders the haul off wheels fitted are generally grooved unless tubular flat braids are to be made when a standard flat wheel can be supplied. For very fine braids such as fishing lines, a 3-grooved wheel is employed.

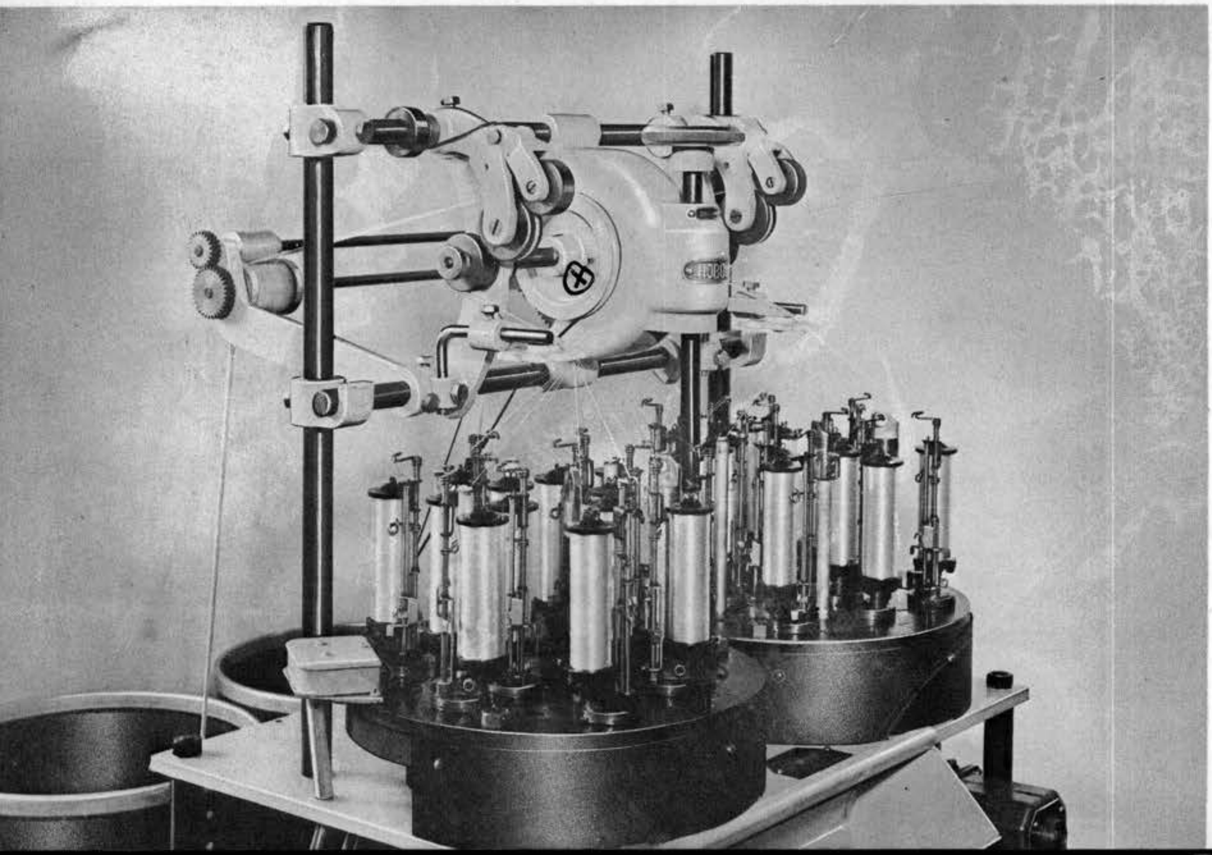
Where floor space is limited or where fine braids such as fishing lines are to be produced, machines may be fitted with Overhead Reception arrangement. This incorporates a stylus type of traverse arm which enables the reception drums to be evenly filled.

Capstan type haul off is also available for heavy cords which must retain circular form.

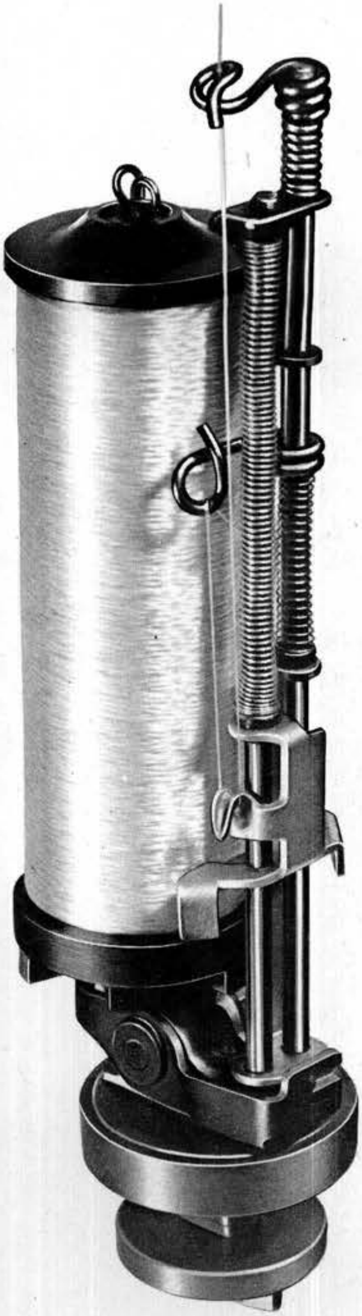


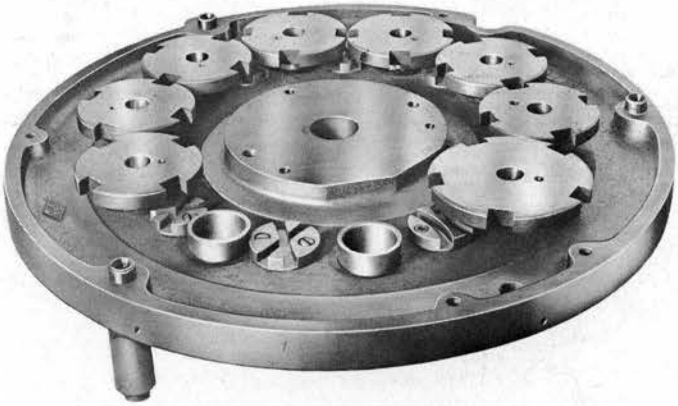
On the left is a view of an overhead reception unit. The drums are driven from the haul-off shaft. The stylus arm lays the braid on the drum. This unit is very convenient where floor space is limited and is recommended for use when fine braids are being made.

Below is pictured a general arrangement of a standard two head machine set up for rayon elastic production. The braid being delivered by means of **auxilary haul of wheels** to containers at the rear of the machine. In the illustration Plastic Bobbins are employed on the carriers, these can be wound on the "Hobourn" winder.



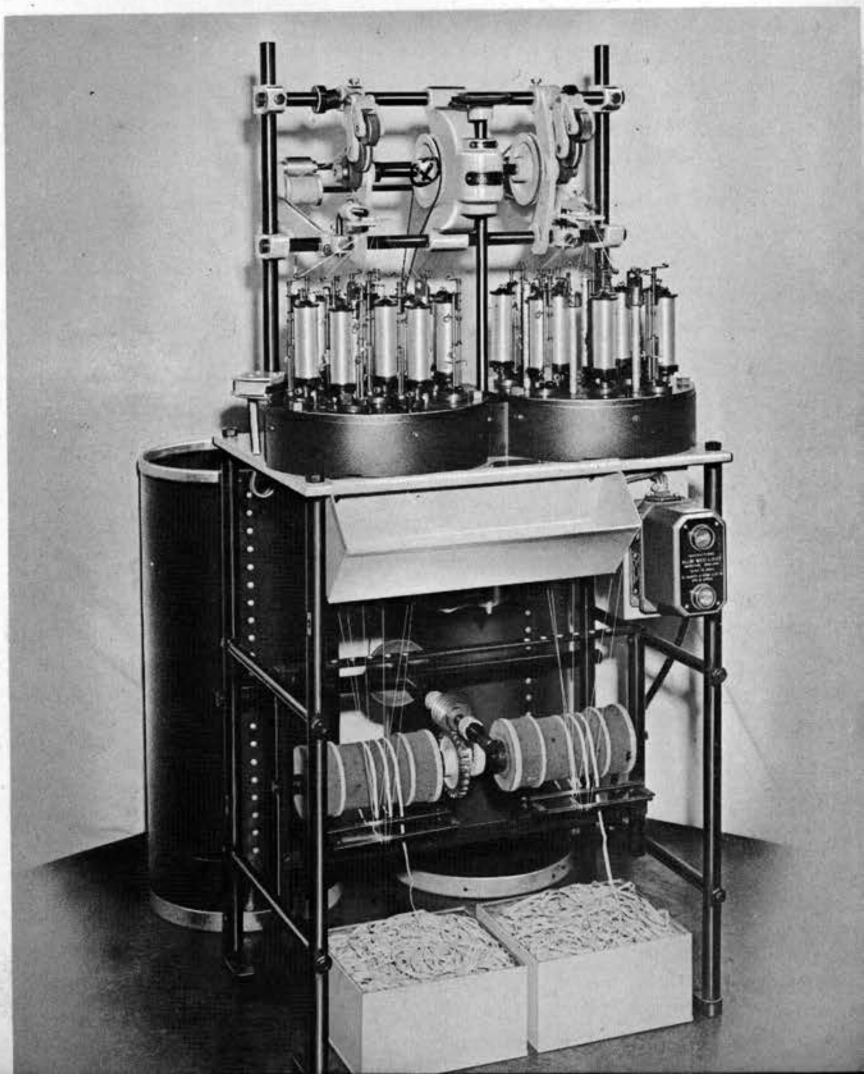
Below can be seen the " Hobourn " High-Speed Carrier, its features being clearly illustrated





Illustrated above is a head casting, the top plate having been removed to show the inserts which guide the carriers from one horn gear to the succeeding one. The horn gear bushes can also be seen. The dish-shaped casting forms the oil bath so that the carrier bases are thus constantly lubricated. All the components are machined to high standards of accuracy.

Pictured below is a 13 carrier machine which illustrates the rubber feed arrangement using ribbon thread.



INDIVIDUAL MOTORISATION

Each machine is equipped with a fractional horse power motor mounted under the table which is coupled with an electric stop motion, so that in the event of a yarn breakage or a bobbin running out of yarn, the motor is automatically stopped. A continuous gear train links the motor shaft to the braiding heads.

Economy in operation results in the employment of this form of drive since the transmission losses inherent to line shafting and pinion gearing are eliminated. The motor runs at maximum efficiency with an absolute minimum of current wastage, and is only running whilst the machine is actually producing.

Stopping and starting are controlled by push buttons incorporated in a direct on line starter which is mounted at a convenient height on the frame at the front of the machine.

Installation costs are lowered since the provision of the power supply leads are the only preliminary to putting the machines into work. Further economies are achieved where small numbers of machines are required to run on urgent production orders. Maximum flexibility in the layout is permitted by the use of this transmission method.

ELECTRIC STOP MOTION

The knock off is achieved by an electric stop motion consisting of trip switches mounted on the heads of the machine. The electric circuit being broken by the depression of a trip bar which is actuated by sliders on the carriers, these are allowed to fall to the bottom of their traverse range when yarn breakage occurs or a bobbin runs out of yarn.

The trip switches operate through the on line starters, one switch per head being fitted to machines up to and including 17 Carrier machines and 2 per head on larger machines.

STAND

A rigid fabricated bar steel stand is provided, provision being made for bolting together to form rows of machines. Foot adjustment is provided to assist levelling of tables.

CARRIER

The carriers are designed for quick threading which enables the maximum number of heads to be maintained per operator. Polished hardened steel pigtails are fitted thus ensuring long life.

The tensioning mechanism is smooth and sensitive and handles the finest counts of yarn without 'ballooning'. Tension adjustment is quickly and easily carried out by the use of standardised tension springs. These have coloured ends to denote their weight and are changed by lifting up the quick release spring retainer bracket.

Bobbins or cops can be employed on the carriers and are held in position by an automatic lock and release spring.

The standard carrier will carry a large capacity bobbin of $1\frac{7}{16}$″ diameter (36.5 mm.) with an overall length of $4\frac{3}{8}$″ (111.1 mm.) providing a wound length of $3\frac{5}{8}$″ (92 mm.), the centre core being 11/32″ diameter (8.7 mm.).

Alternatively, using the Hobourn cop holder, a package length of 4″ (101.6 mm.) can be employed. A larger size of carrier is used on the large cop 16 and 24 Carrier Machines which are described in our leaflet CB/49.

RUBBER FEED

The unit illustrated on the previous pages can be supplied to suit all machines, the stands being drilled to allow fitment.

Designed to provide a controlled rate of feed to the braiding heads, it is an essential for the production of first quality elastic braid. It can equally well be employed to feed and control ribbon type rubber thread.

The mechanism is positively driven by means of a worm and worm wheel, a multiple stepped grooved pulley being driven from the haul off shaft by means of a belt, allowing a variation of the rate of feed within limits but closely controlled by the haul off rate.

RANGE OF MACHINES

The following range is available for flat rigid or elastic braids :—

9 carrier machines in four head units.
13, 17, and 21 carrier machines in two head units.
25, 29, 33, 37, and 49 carrier machines in Single head units.

For round or tubular flat braids :—

8, 12, 16, and 20 carrier machines in two head units.
24, 32, 40, and 52 carrier machines in single head units.
16 and 24 carrier cable covering machines in single head units.

Special Machines.

Six Head Candlewick Braiders.
Taper Fishing Line Braiders with automatic control of line diameters, tapers and lengths.

GENERAL SPECIFICATION

All machines are supplied equipped with stand, built-in electrical equipment consisting of direct on line starter with push button control, fractional horse motor wired for installation and automatic trip switches. Braid haul off unit of pressure roller type, or capstan type if specified, fitted with 1 haul off wheel per head or 1 pair of lay gears according to type of haul off. A complete set of carriers is provided equipped with standard tension springs.

Rubber feed mechanism, bobbins or cop holders, bobbins for rubber thread, additional tension springs and haul off wheels, are supplied as ordered.

Special Attachments are available for Ric-Rac, Picot Edge and other fancy braid productions.

WEIGHTS AND DIMENSIONS

Type	Net Weight	Width	Depth	Height of Table	Height Overall
8 carrier	2 cwt. 1 qr.	28″	18½″	31″	53″
	115 kilos	71 cm.	47 cm.	79 c.m	134 cm.
12, 13 carrier & 6 ..	2 cwt. 2 qrs.	24″	17″		
Head Candlewick m/c	127 kilos	61 cm.	43 cm.	,,	,,
16 & 17 carrier ..	2 cwt. 3 qrs.	28″	18½″		
	140 kilos	71 cm.	47 cm.	,,	,,
20 & 21 carrier ..	3 cwt. 3 qrs.	32½″	21″		
9 carrier ..	191 kilos	83 cm.	53 cm.		
25 carrier ..	3 cwt.	24″	21″		
29 carrier ..	153 kilos	61 cm.	53 cm.	,,	,,
32 & 33 carrier ..	4 cwt.	26½″	24″	,,	,,
	204 kilos	67 cm.	61 cm.	,,	56″
37 & 40 carrier ..	4 cwt. 1 qr.	30½″	26½″		142 cm.
	216 kilos	78 cm.	67 cm.	,,	,,
49 carrier	7 cwt. 1 qr.	40″	34″		60½″
	10 lb.				
	373 kilos	102 cm.	86 cm.	,,	154 cm.

SHIPPING SPECIFICATION

Machine for overseas markets are sent out with haul off unit and front tray removed and stowed beneath table. Before erection our Notes on installation should be carefully read.

Type	Gross Weight	Width	Depth	Height
8 carrier	3 cwt. 1 qr.	2′ 9″	2′ 2″	3′ 10″
	168 kilos	84 cm.	66 cm.	117 cm.
12, 13 carrier & 6	3 cwt. 2 qrs.	2′ 4″	2′ 1″	3′ 8″
Head Candlewick m/c	178 kilos	71 cm.	64 cm.	112 cm.
16 & 17 carrier ..	3cwt. 2qrs. 14lb.	2′ 9″	2′ 2″	3′ 10″
	185 kilos	84 cm.	66 cm.	117 cm.
20 & 21 carrier ..	4 cwt. 3 qrs.	3′ 0″	2′ 2″	3′ 11″
9 carrier ..	242 kilos	92 cm.	66 cm.	119 cm.
25 carrier ..	4 cwt.	2′ 5″	2′ 1″	3′ 10″
29 carrier ..	204 kilos	74 cm.	64 cm.	117 cm.
32 & 33 carrier ..	5 cwt.	2′ 7″	2′ 5″	4′ 0″
	255 kilos	79 cm.	74 cm.	122 cm.
37 & 40 carrier ..	5 cwt. 1 qr.	2′ 11″	2′ 6″	4′ 2″
	267 kilos	89 cm.	76 cm.	127 cm.
49 carrier	8 cwt. 3 qrs.	3′ 8″	3′ 2″	3′ 10″
	445 kilos	112 cm.	97 cm.	117 cm.

All weights and sizes are approximate; metric equivalents quoted are correct to nearest kilo or centimetre.

HOBOURN
"HIGH-SPEED" BRAIDERS

General Catalogue and Handbook

HOBOURN AERO COMPONENTS LTD.
COVENTRY - - ENGLAND

Textile Machinery Manufacturers

Telegrams: **'Polar' Coventry.** *'Phone:* **Coventry 60271**

HOBOURN
"HIGH-SPEED" BRAIDERS

Increased output
Longer life

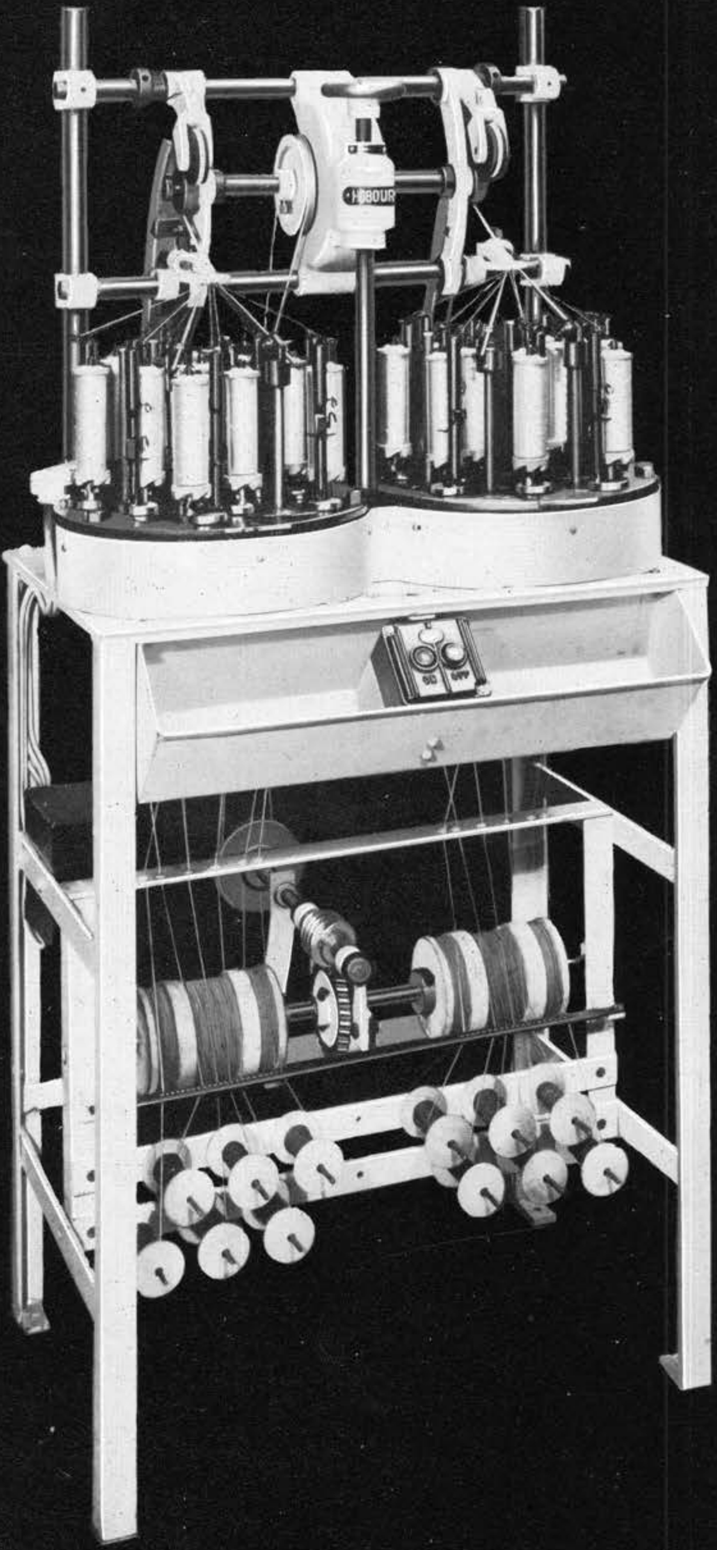
With our 25 years' experience of producing components to very fine limits of accuracy, chiefly for the Aircraft Industry, we have built up a team of experts with plant and equipment which is second-to-none in the industry.

We have developed a braiding machine of ingenious design, giving unequalled reliability, high-speed, and producing braids of the highest quality. We have been experimenting for a considerable time in developing this machine, and we can now justly claim that our machine will open the door to revolutionising the Braiding Industry.

We have equalled the advance in design of the machine itself by developing the " Hobourn " Carrier, which is capable of producing the highest quality braids at the fastest speeds.

Our experience of aero engine manufacture has enabled us to select special wear resisting materials and the machines have been produced to the same close limit as applied to aircraft components.

Our name is new to the Textile Trade, but we feel confident that our high reputation for quality, accuracy and service on aircraft components will be proved very quickly in the Textile Industry.



FULLY EQUIPPED 13 CARRIER FLAT BRAIDER WITH RUBBER FEED.

TYPES OF MACHINES FOR RIGID OR ELASTIC BRAID

The following types of Standard Machines are supplied for rigid or elastic braids; those with an even number of carriers are for round or tubular braids, and with an odd number of carriers for flat braids.

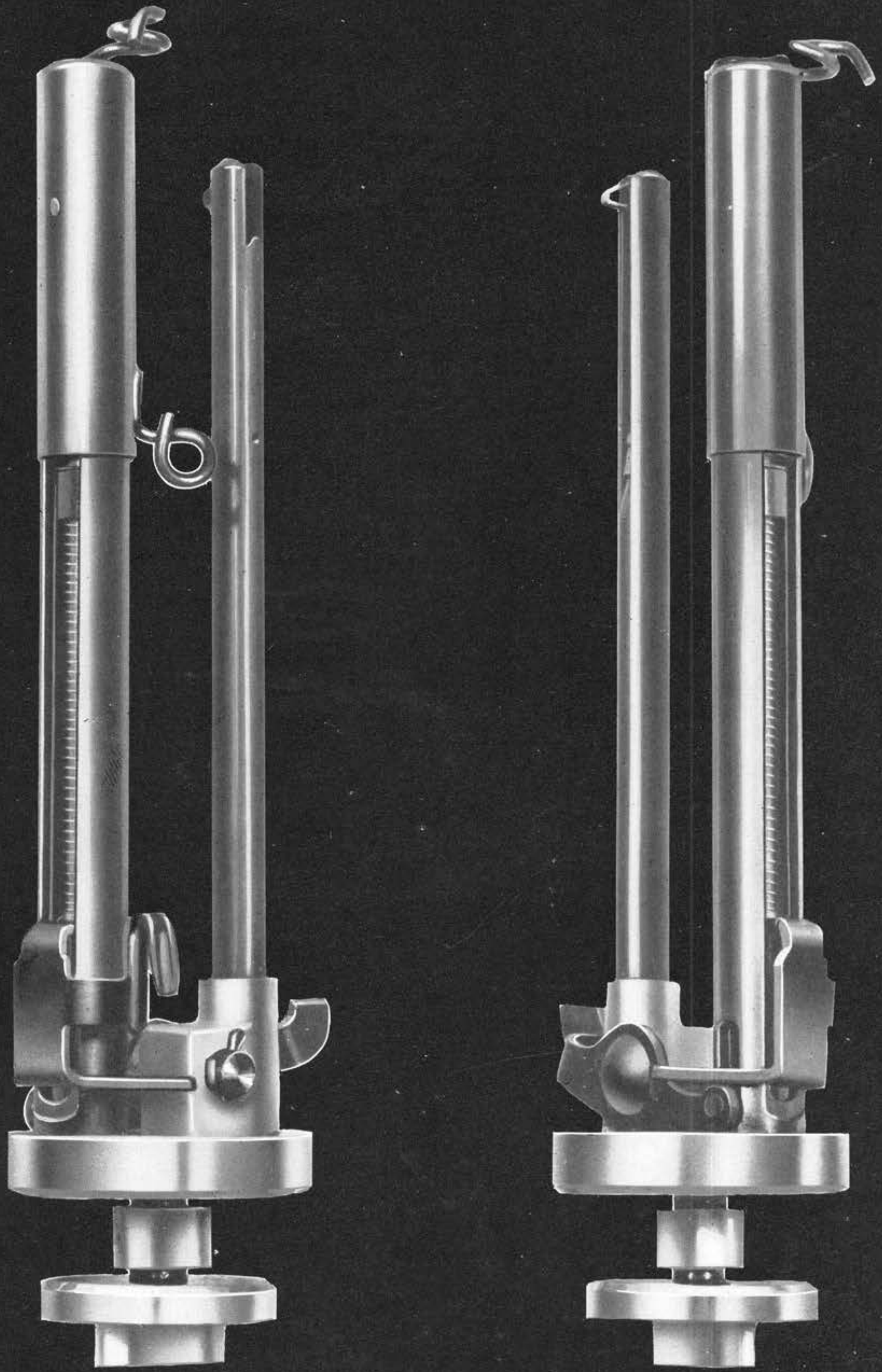
12 Carrier
13 Carrier
16 Carrier
17 Carrier
20 Carrier
21 Carrier

Each machine has two heads. The rubber feed mechanism for elastic braiding is an additional unit which can be fitted to all machines.

Machines with a larger number of carriers or for specialised work can be supplied to individual requirements.

The carriers and moving parts of all standard machines are completely interchangeable and any spares required can be obtained from stock.

Patents Applied For.



THE "HOBOURN" CARRIER

Patent Applied For.

OUTSTANDING FEATURES

THE " HOBOURN " CARRIER.

This has been produced as the result of long research and exhaustive tests, with the object of providing the Braiding Industry with a carrier that will produce the highest quality braids at the fastest speeds, and the " Hobourn " Carrier is unique in these respects.

As will be seen from the plate on Page 8, this Carrier has been designed for quickness in setting up to allow one operator to supervise the maximum number of heads.

Yarn Tension and Supply. These are controlled by enclosed compression springs to avoid choking of the springs by fluff, with consequent deterioration of work and yarn breakages.

The movements of the tensioning mechanism and the pawl controlling the bobbin feed are very smooth, and fine yarns can be braided fast without fear of ballooning or breakage.

Tension Adjustment. Compression springs of varying strength can be supplied, these being readily interchangeable by removing the quick release bayonet cap on the top of the Carrier. The various types of spring can be identified by clearly coloured ends.

Bobbin Changing. The bobbins are held down by an automatic lock and release spring, and can be pushed on or removed with one hand.

Quick Threading. Polished open-ended pigtails and hooks are used for quickness in threading, with the operator using one hand only.

Type of Wind. The carriers have been designed to operate equally well with both straight or cross wound yarn.

Extra Large Bobbins. The carriers will hold large diameter bobbins giving increased yarn capacity and longer duration between bobbin changes. The dimensions are as follows :—

Overall diameter of flange	$1\frac{7}{16}''$ (36.5 m.m.)
Length between flanges of bobbin	$3\frac{5}{8}''$ (92.0 m.m.)
Size of centre hole through bobbin	$\frac{11}{32}''$ (8.7 m.m.)
Overall length of bobbin	$4\frac{3}{8}''$ (111.1 m.m.)

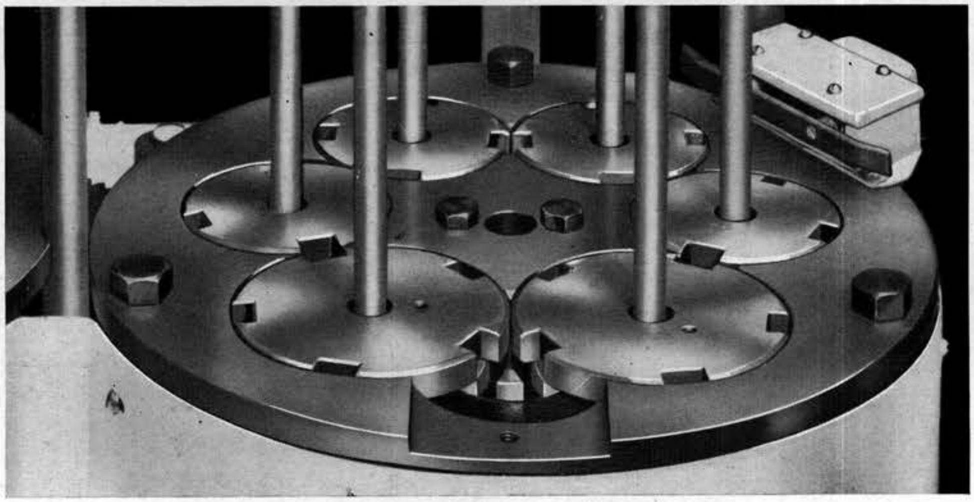
OUTSTANDING FEATURES (*Cont.*)

TRACKLESS HEAD WITH OIL BATH.

The head has been specially designed to operate at very high speeds, without causing undue strain or wear on the moving parts.

There is no track, the carriers being actuated by the horn gears and the cam plate. See plate below.

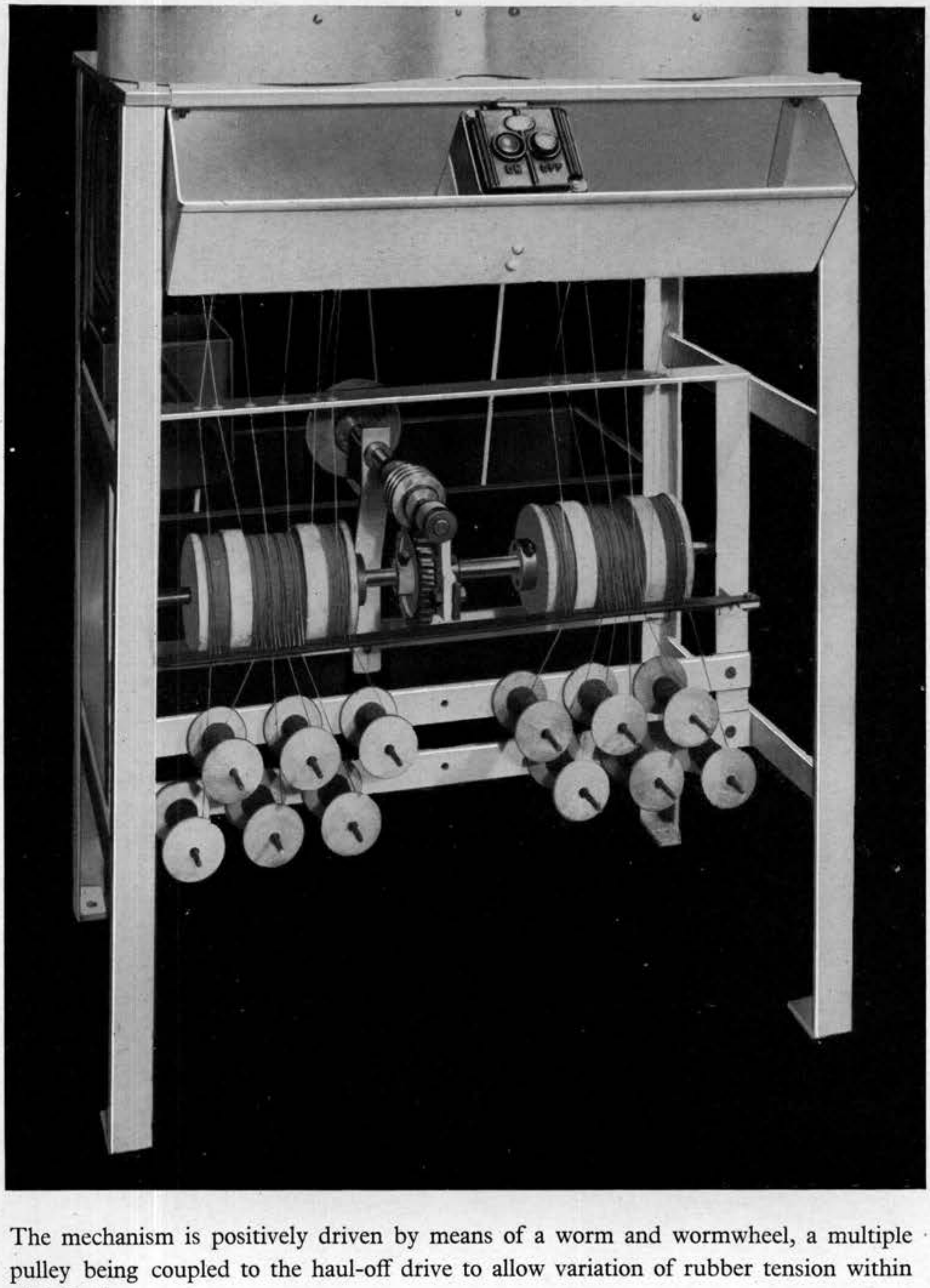
The case-hardened carrier bases and ground horn gear bearings operate in an oil bath. The change over of the carriers is effected by passing them across wear-resisting guides, submerged in the same oil bath.



This arrangement eliminates wear arising through carriers riding in a track, without lubrication of the bearings and bases. The construction of the head can be clearly seen from the illustration above of a 13 carrier head with the extraction plate removed. The oil is put into the chamber through the extraction plate slot, so that the bases of the carriers and the inserts (one of which can be seen in the front) are operating in the oil.

RUBBER FEED.

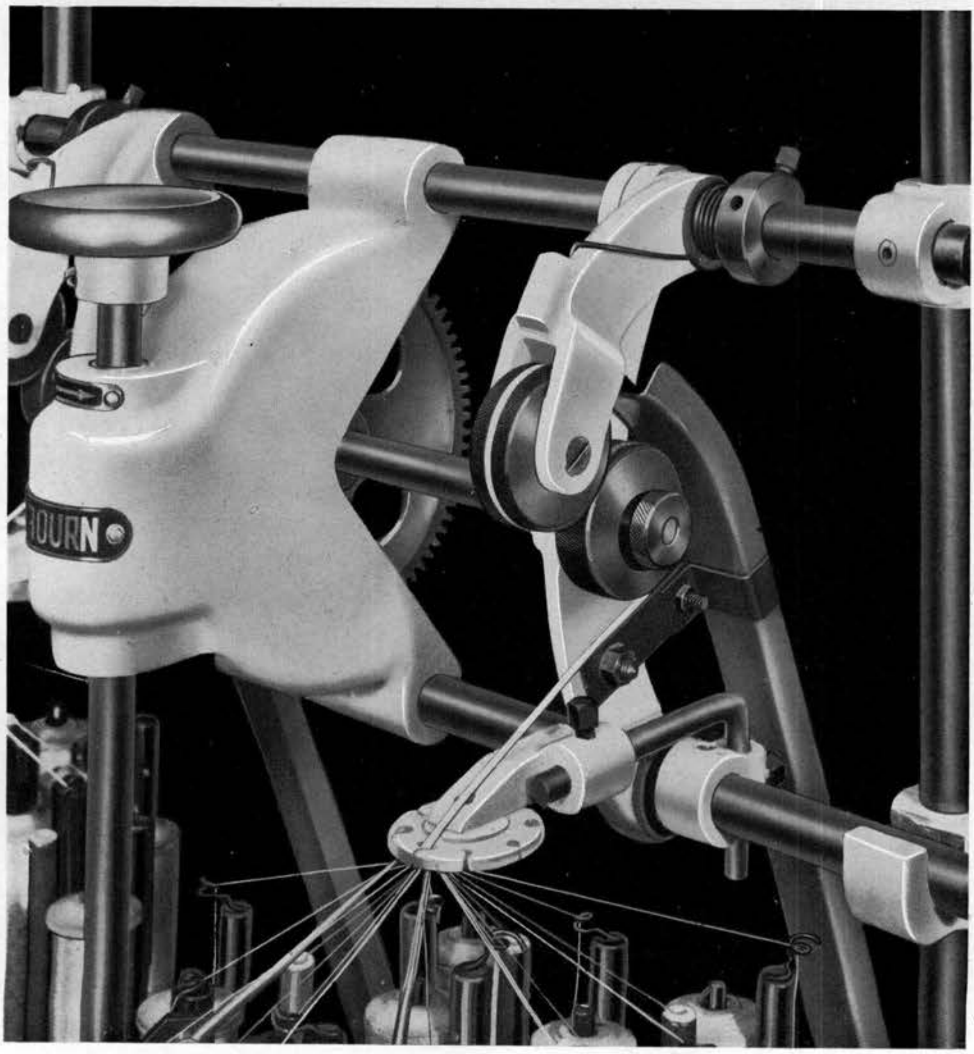
Rubber Feed Mechanism, see plate below, can be supplied as an extra unit, provision being made on all machine stands for the fitment of this unit.



The mechanism is positively driven by means of a worm and wormwheel, a multiple pulley being coupled to the haul-off drive to allow variation of rubber tension within wide limits.

HAUL-OFF MECHANISM.

Positive gear driven haul-off wheels are fitted independently to each head. The wheels are hardened and knurled for non-slip, the work being passed between the wheel and a special spring tensioned pressure roller, as will be seen in the plate below.



The wheels which can be supplied in the following sizes :—
2″ (50.8 m.m.) ; 2¼″ (57.1 m.m.) ; 2⅜″ (60.3 m.m.) 2½″ (63.5 m.m.)
can be quickly changed without tools by undoing one knurled nut.

The diameters of the wheels are held to very close tolerances and the whole arrangement ensures perfectly uniform and trouble-free haul-off.

OUTSTANDING FEATURES (Cont.)

STAND.

An angle girder stand with feet for bolting to the floor, one foot being adjustable for levelling, is integral with each two headed unit. Provision is made for bolting stands together to form rows of machines.

INDIVIDUAL MOTORISATION.

We are summarising below some of the many advantages gained by the use of individual motors.

ECONOMY.

The running costs are reduced due to the high percentage of work turned out to current consumed. This will be readily appreciated for the following reasons :—

> The fractional horse-power motor driving the two heads is only running when the machine is actually producing.
>
> An electrical knock-off switch on each head ensures that even for a brief delay, such as yarn breakage, the motor is automatically switched off. The arrangement is, of course, absolutely fool-proof and positive as compared with the old-fashioned method of knock-off.
>
> All power transmission losses due to line shafting and individual clutches on line shaft drive are cut out.
>
> The motor is running at it's maximum efficiency, with minimum current wastage during the whole of the time that the machine is operating.

EASE OF CONTROL.

The machine can be started and stopped instantaneously by means of a push button control switch which is mounted in the front tray of the machine.

FACTORY LAYOUT.

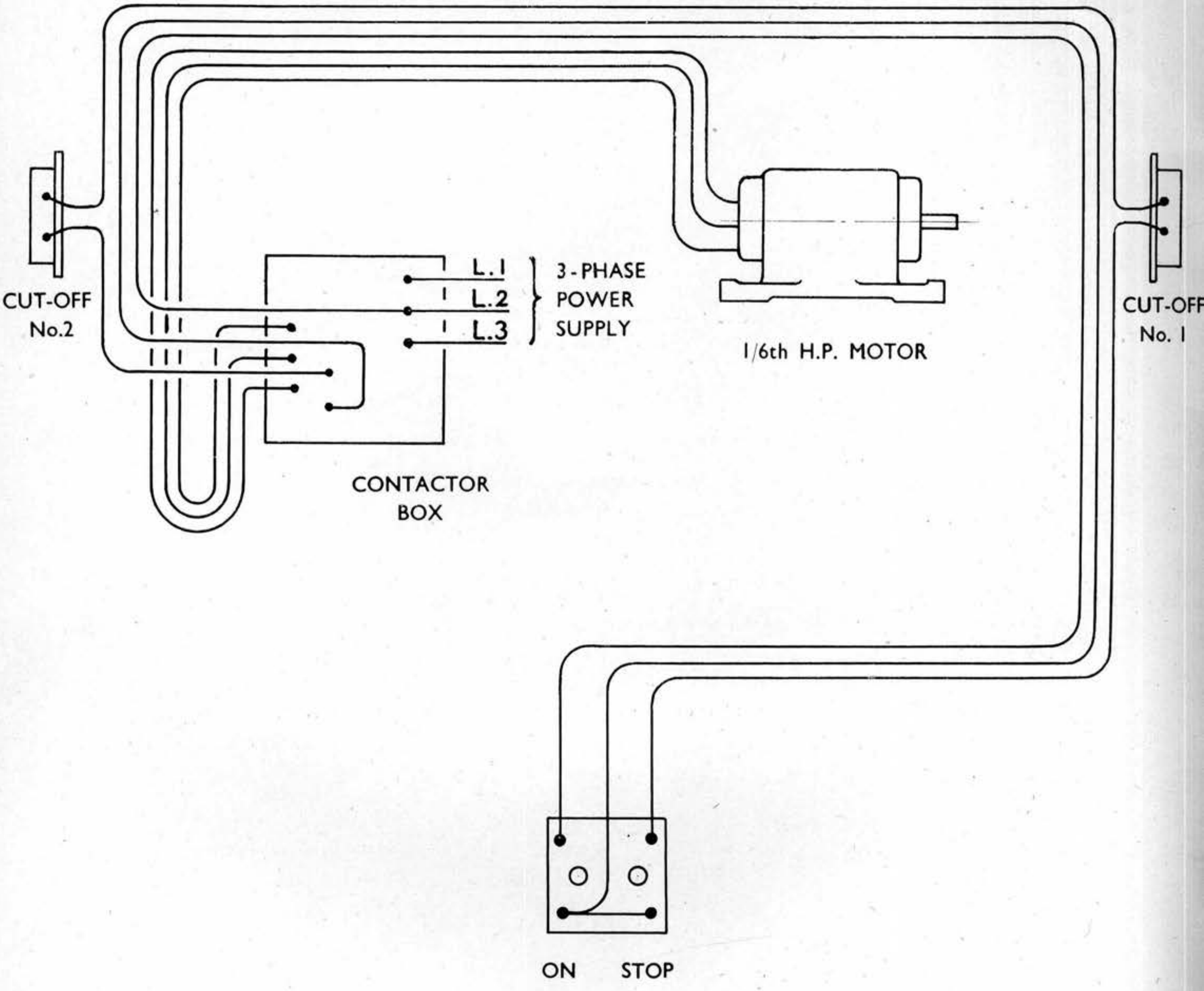
The self contained unit is designed for economy in floor space.
All shafting, fixtures, belts and guards with their attendant dangers and disadvantages are obviated.

The greatest flexibility of layout is achieved and machines can be moved about at will, to accommodate changes in plant or buildings.

INSTALLATION AND MAINTENANCE INSTRUCTIONS

These notes have been prepared for the guidance of operators of Hobourn Braiders, to assist them in utilising the machines to the best possible advantage.

We appreciate that users have their own individual systems which must be applied to produce their special work, but we hope that the information will prove helpful.



WIRING DIAGRAM — BRAIDING MACHINES

INSTALLATION & MAINTENANCE

BOLTING DOWN THE MACHINES.

It is essential that the machines stand level and are firmly secured to the floor.

They are provided with drilled feet, one of which is adjustable for levelling the machine. The frames are also drilled, and bolts and distance pieces provided, so that they may be bolted together in rows.

CAUTION.

Before coupling up the machine see that the extraction plates in the front of the heads are firmly secured in position. THE MACHINE MUST, UNDER NO CIRCUMSTANCES, BE RUN WITH THE PLATES OUT OR LOOSE.

ELECTRICAL.

The electrical equipment on the machine will be standard A.C. 400-440 volt, 3 phase, 50 cycle, unless a special voltage has been specified.

Before connecting up, check the voltage marked on the plate of the motor and confirm that it is correct for the mains being used.

CONNECTING UP THE MACHINE. After bringing the current supply to the machines in accordance with the local regulations, connect the three feed wires to the line terminals 1, 2 and 3, in the contactor box on the left-hand side of the machine stand.

Before finally fixing the wires check the direction of rotation of the motor and DO NOT FIT THE MOTOR PINION UNTIL IT IS ROTATING IN THE CORRECT DIRECTION. The motor must rotate CLOCKWISE on the 12, 13, 20 and 21 Carrier Machines and ANTI-CLOCKWISE on the 16 and 17 Carrier machine, as seen from above the machine.

When correctly wired the hand-wheel of the machine will revolve in the direction of the arrow on the worm wheel casing.

Earth the machine frame.

NOTE. A wiring diagram is given on Page 16.

INSTALLATION AND MAINTENANCE INSTRUCTIONS (Cont.)

LUBRICATION.

Before starting the machine take out the extraction plate locking screw and remove the extraction plate from each head to see that there is oil in the well.

The well in each head should be filled up with gear oil (Shell C.Y.6 is recommended) to a level half way up the bronze cross-overs, one of which will be visible when the extraction plate has been removed. Replace the plate and tighten the screw before starting the machine.

The oil must be maintained at this level, and should be renewed periodically when it becomes dirty. A drain plug is provided at the front of each head to let out the old oil.

A few drops of oil should be put into the oil holes in the two large horn gears at the front of each head daily, and down the centre holes of all horn gears weekly. The gears should be examined at monthly intervals, and if necessary, lightly smeared with grease.

ASSEMBLING THE CARRIERS.

To load the carriers into the machine :—

Remove the extraction plate, and place the first carrier into the slot on the right hand horn gear with the bobbin leading.

Rotate the hand wheel in the direction of the arrow and load the remaining carriers in a similar manner into every alternate slot in the right-hand horn gear.

This only loads half the carriers on Round Machines. Repeat the procedure, loading carriers into the slots on the left-hand front Horn Gear, which come opposite to the empty slots on the right-hand front Horn Gear.

It is advisable to smear each horn gear slot lightly with grease before placing the carrier into position.

Replace the extraction plate and locking screw and make certain that the screw is tightened up firmly.

Before starting the machine, rotate it by hand to ensure that the carriers have been correctly loaded.

Do not oil any moving parts of the carrier.

INSTALLATION AND MAINTENANCE INSTRUCTIONS (Cont.)

VARIATION OF YARN TENSION.

The tension on the carriers may be varied for different types of yarn by changing the long compression springs. These can be supplied in varying strengths for different classes of work.

To change the springs, press down the bayonet cap on the carriers and turn in an anti-clockwise direction. The cap will then lift off, exposing the spring. When fitting the new spring, in order to avoid trapping it with the cap, hold it down below the level of the top of the spring post when re-fitting the cap.

HAUL-OFF ADJUSTMENT.

The speed of haul-off may be varied by fitting one of the alternative sizes of knurled haul-off wheels in place of the standard 2″ wheel. The wheels are keyed to the driving shaft, and can be pulled off after removing the knurled nut.

For some types of work it may be necessary to vary the spring tension of the pressure roller.

This may be done by undoing the square headed bolt on the collar to which the spring is fixed and rotating the collar round the shaft by inserting a tommy bar into one of the holes provided.

BRAID GUIDE ADJUSTMENT.

The braid guide is fully adjustable for position by undoing the two square headed bolts which clamp it, the aperture being varied by undoing the locking screw and rotating the guide.

RUBBER FEED MECHANISM.

The rubber should be threaded in accordance with individual operators requirements, but we recommend that each thread should be wrapped at least three times round the feed drum to avoid slip.

The speed at which the rubber is fed should then be adjusted according to requirements by choosing the appropriate groove in the wooden pulley at the back of the machine.

INSTALLATION AND MAINTENANCE INSTRUCTIONS (Cont.)

DISMANTLING AND RE-ASSEMBLING THE HEAD.

If it is desired to dismantle or remove a head from the machine the following procedure should be adopted :—

Disconnect the machine from the power supply.

Cover the rubber feed unit to prevent oil falling on it during dismantling. Remove the carriers. Take off the two needle holders.

From the underside of the baseplate unscrew the guide tubes through which the rubber passes. (On round machines hexagon plugs are fitted in place of guide tubes). It will be necessary to insert a spanner above the baseplate to hold each hexagon foot bearing while the guide tube is being unscrewed from it. Unscrew the three hexagon headed screws which hold the head to the baseplate. Remove the cover at the back of the trip-switch, and disconnect the two wires.

The head of the machine will now lift away from the baseplate, leaving the foot bearings on the baseplate.

When re-assembling, the foot bearings must be put back in their original positions and smeared inside with grease.

REMOVING AND RE-ASSEMBLING HORN GEARS.

The horn gears are held in position by the driving gears, which are secured to them by means of cotters. To remove a horn gear, loosen the cotter, which passes through the driving gear, and the horn gear will then lift out, leaving the driving gear on the baseplate.

When re-assembling, the undermentioned points must be carefully noted.

Each horn gear must be replaced in its original bearing, and the bearing well greased. (The horn gears are numbered consecutively, starting from the front left-hand horn gear). A clearance of .004″ (.10 m.m.) to .006″ (.15 m.m.) must be allowed between the face of the driving gear and the underside of the casting.

IT IS ESSENTIAL THAT THE SLOTS OF THE HORN GEARS ARE LINED UP ACCURATELY TO ENSURE THE SMOOTH RUNNING OF THE MACHINE. This must be done by inserting the setting gauge, which is supplied with the machine, into the slots of two adjacent horn gears and securing each driving gear to its horn gear by tightening up the cotter with the setting gauge in position.

Before loading the carriers into the machine make a final check with the setting gauge to see that all horn gear slots line up correctly.